# information on courses & workshops 1984-85

training & certification

Ministry of the Environment
Ontario

The Honourable
Andrew S. Brandt
Minister

Brock A. Smith
Deputy Minister

Ontario

Ministry of the Environment
Ministère de l'Environnement

135 St. Clair Avenue West
Suite 100
Toronto, Ontario
M4V 1P5

135 ouest, avenue St. Cla
Bureau 100
Toronto (Ontario)
M4V 1P5

March 15, 1984.

Dear Sir/Madam:

Herewith a copy of the publication describing the 1984/85 courses and workshops offered by the Training & Certification Section, Ontario Ministry of the Environment. A brief description of each course and workshop is presented. The capacity date and location of each course is outlined in Appendix 30.

Please note that the following new courses are included:

a) Instrumentation and Control
b) Water Supply System Operations
c) Confined Space Entry
d) Operation/Maintenance of Wastewater Lift Stations
e) Safety and Sampling - Hazardous Chemicals
f) Stack Sampling

The Primary Treatment and Sludge Digestion Workshop has been redesignated Sludge Digestion & Handling and the Acoustic Technology Courses as Environmental Noise Courses.

Please note the application procedures on pages 5 and 6, and the information required to be submitted with each application. It is important that the name of the candidate be submitted as early as possible as vacancies are limited and courses are quickly filled.

Please circulate this publication to others in your organization who have a responsibility for staff training and development. Additional copies are available on request.

Yours truly,

R.R. Doddridge, P. Eng.,
Manager,
Training & Certification Section,
Human Resources & Personnel
Development Branch.

# Ministry of the Environment
# Technical Training Program
# 1984 - 1985

## Preface

The responsibilities of the Training and Certification Section, Ontario Ministry of the Environment, include the development and conduct of training and certification programs for personnel engaged in the protection and upgrading of the natural environment. By working in close co-operation with professional, industrial and government organizations, programs are designed to meet the needs of Ministry and non-Ministry staff. As additional requirements are identified, new programs will be developed. Comments on scheduled courses or suggestions for new ones are welcomed.

If recipients of this bulletin know of others in their localities who might be interested in the Ministry training program please encourage them to request a copy of the bulletin from this office or:-

Publications Services
Ministry of Government Services
880 Bay Street
Toronto, Ontario M4V 1P5

Registration procedures are outlined on page 5, paragraphs 8, 9 and 10. Additional information may be obtained from:

Registration Secretary
Training and Certification
Section
Human Resources & Personnel
Development Branch
135 St. Clair Avenue West
Toronto, Ontario M4V 1P5
(416) 456-0266 or
456-0895

Training Philosophy:

1. In general, programs employ the Behavioural Objectives Approach to Training (BOAT). A training manual, prepared for each course or workshop, as a reference text, provides information on the topics and lists objectives which tell the trainee what he must know and do to successfully complete the course. At the same time it reminds the instructor what he must teach, describe or demonstrate so that the performance of the trainee meets the required standards. To verify successful completion, both practical (hands-on) and written tests are administered to the trainees.

2. Instructors are obtained from many sources and have usually been involved in developing material for the courses and workshops. As part of their normal work they are usually also responsible for providing advice, guidance and practical assistance to the operational staff, so they understand the day-to-day problems faced in the field. Based on this knowledge and background, the instructor can deal with any relevant questions raised during the course or workshop. Furthermore, he is identified to the trainee as a point of contact for advice on problems which might arise.

Scope of Program:

3. A program of courses, workshops and seminars is offered, annually, between September and May. Depending on commitments, the Training and Certification Section, if requested, will also visit a particular locality at a mutually agreed time and conduct certain of its programs or a one or two day mini-course on specific topics such as Preventive Maintenance, Pump Operations and Gas Chlorination. If a Municipality, Ministry Region or other organization wishes to conduct a program locally, the Section is prepared to advise and assist.

4. Training programs offered by this Ministry and described in the attached Appendices are listed below:

Appendix:

1. Basic Sewage Treatment Operation
2. Activated Sludge Workshop
3. Sludge Digestion and Handling (Formerly Primary Treatment and Digestion)
4. Basic Water Treatment Operation Course
5. Surface Water Treatment Workshop
6. Basic Gas Chlorination Workshop

7. Pump Operation Workshop
8. Preventive Maintenance Workshop
9. Digester Gas System Maintenance Workshop
10. Op/Maintenance of Water Distribution Systems
11. Op/Maintenance of Wastewater Collection Systems
12. Laboratory Skills for Plant Operators
13. Advanced Water and Wastewater Treatment
14. Instrumentation & Control
15. Water Supply System Operations
16. Confined Space Entry
17. Op/Maintenance of Wastewater Lift Stations
18. Sewer and Watermain Design Course
19. MEA/MOE Inspectors Course - Construction of Sewers & Watermain
20. MEA/MOE Inspectors course - Construction of Sewage and Water Treatment Facilities
21. Industrial Abatement - Air Management, Parts I, II & III
22. Visible Emissions Identification Certificate Course
23. Control of Liquid Industrial Waste
24. Waste Disposal by Landfilling
25. Environmental Investigations
26. Environmental Noise -I, II, III and IV, (formerly Acoustics Technology)
27. Environmental Noise in Land Use Planning (formerly Acoustics Technology)
28. Safety and Sampling - Hazardous Chemicals
29. Stack Sampling

5. The program schedule is at Appendix 30 and a course calendar is at Appendix 31.

Prerequisites:

6. (a) Prerequisites are specified for some courses. Employers must ensure that course candidates meet these requirements. If an application is received for a candidate lacking the course prerequisites, it will not be accepted.

(b) Certain advanced courses require the Ministry Basic Water or Sewage Course or equivalent as a pre-requisite. Equivalents to the Ministry Basic Courses include the courses previously offered by the OWRC;

(c) Certain courses, because of prerequisites and/or course design, are restricted to specific groups.

Course Capacity:

7. The capacity of each course, workshop and seminar is shown on Appendix 30 Program Schedule. If a course is over-subscribed, selection of candidates will be based on date of application.

Application Procedures:

8. An application must be submitted by letter to the Registration Secretary, Training and Certification Section:

   (a) For a Ministry employee, by a Regional Director, a Regional Manager, a Branch Director or Supervisor.

   (b) For a non-Ministry employee, by the individual's employer.

9. The following information must be included:

   (a) Course and date. An acceptable alternate, if available, should be shown.

   (b) Full name of applicant and home address.

   (c) Job title, address of employment and department or office.

10. An application (registration fee, if applicable) should be forwarded to the Registration Secretary at the address shown in the Preface as early as possible and desirably no later than three months prior to the date of the course.

11. If a course is over-subscribed, selection of candidates will be based on date of receipt of application. As soon as possible after its receipt, the individual's employer will be notified if the application is accepted. If the course of first choice is over subscribed and an alternate has been shown on the application, the nominee will be listed for the alternative course (if space is available), subject to confirmation by the employer.

Registration Fee:

12. The required registration fee for each course is stated in the appropriate appendix. Ministry employees may pay the fee on registration. Registration fees must accompany the applications of non-Ministry applicants, and

(a) For all courses except MEA/MOE co-sponsored courses (Appendices 18, 19 and 20), the cheque or money order must be made payable to Training and Certification Section;

(b) For MEA/MOE co-sponsored courses (Appendices 18, 19 and 20), the cheque or money order must be made payable to Municipal Engineers Association of Ontario.

Pre-Course Study:

13. Prior to a course, an information package will be forwarded to each applicant. This will include general course information, a sketch map showing course location and, in most cases, reference material for pre-course study. It is essential that employers encourage applicants to review the material provided for study purposes. For certain courses, the applicant will be required to submit solutions to problems forwarded with study material.

Course Completion:

14. The appropriate appendix shows the minimum average to be attained for successful completion of the course. A candidate's results and certificate will be forwarded to his employer, who is responsible for informing the individual.

15. As do many other organizations, such as the WPCF, AWWA and APWA, Environment Ontario now awards Continuing Education Units (CEUs) to participants who successfully complete certain courses or workshops. A permanent record of CEUs awarded to individuals will be maintained by the Training and Certification Section. A participant may request this record to use, if necessary, to meet requirements for

(a) Documentation of continuing qualifications for certification of operational staff of a water or wastewater utility;

(b) Evidence of personal and vocational growth and adjustment to meet changing career demands;

(c) Demonstration of a conscious effort towards personal development.

CEUs are awarded on the basis that one (1) CEU is equal to ten contact hours of formal instruction in job related training. Thus, for example, 3.0 CEUs will be awarded for successful completion of the Activated Sludge Process Workshop, since it involves 30 hours of formal instruction. The assigned value is shown on the appropriate appendix in this publication.

Training Facilities:

16. (a) These are located at the Ontario Experimental and Training Facility (OEF), Brampton and the Ministry Laboratory, Resources Road. The sketch map at Appendix 32 shows these locations.

(b) Training conducted outside of Toronto will be held in suitable accommodation obtained specifically for the session.

(c) Course locations are shown at Appendix 30.

Transportation and Accommodation:

17. These arrangements, including reservations, are the responsibility of the trainee. The sketch map indicates the motel/hotel area which is within reasonable proximity to the training facilities. A list of hotels with approximate room costs is at Appendix 33.

18. Employers must ensure that trainees on arrival at the training location are in possession of sufficient funds to meet anticipated expenses, including the registration fee if not previously paid.

Training Manuals:

19. Training manuals published by the Ministry of Environment are available for purchase from:

Publications Services
Ministry of Government Services
880 Bay Street, (5th Floor)
Toronto, Ontario M7A 1N8

These include:

| | |
|---|---|
| Basic Sewage Treatment Operation | $ 4.50 |
| Activated Sludge Process | 7.00 |
| Primary Treatment and Sludge digestion | 2.00 |
| Basic Water Treatment Operation | 7.50 |
| Surface Water Treatment Operation | 7.00 |
| Basic Gas Chlorination | 6.00 |
| Pump Operation | 5.00 |
| Preventive Maintenance | 7.50 |
| Digester Gas System Maintenance | 2.00 |
| Water Distribution Operations and Maintenance | 7.50 |
| Acoustics Technology I, II and III | 2.00 ea. |
| Acoustics Technology in Land Use Planning Vols. I and II | 10.00 ea. |
| Industrial Abatement - Air Management Vols. I and II | 2.00 ea. |
| Control of Liquid Industrial Waste | 3.00 |

20. Manuals published by The Ontario Municipal Engineers Association include:

| | |
|---|---|
| Sewer & Watermain Design Manual | $ 15.00 |
| Sewer & Watermain Construction Inspectors Manuals I and II | $ 5.00 ea. |

These are available for purchase by writing to:

Mr. B.B. Strachan, P. Eng.
MEA Treasurer & Publications Secretary
P.O. Box 112
Perth, Ontario K7H 1G3

21. Prices are subject to change without notice.

Appendix 1

## Course Description

## Basic Sewage Treatment Operation Course

Purpose:

The Basic Sewage Treatment Operation Course is designed primarily for operators in training and to increase on-the-job efficiency of wastewater treatment plant operators. The program stresses "the need to know" of all processes associated with wastewater treatment. This course is a prerequisite to the Activated Sludge Workshop and the Sludge Digestion and Handling Workshop. CEU Value 3.0

Scope:

The course covers the following topics:

A. SEWAGE CHARACTERISTICS

B. BACTERIOLOGY OF SEWAGE

C. PRIMARY TREATMENT

D. THE ACTIVATED SLUDGE PROCESS

E. DIGESTION OF SLUDGE

F. SLUDGE HANDLING

G. INDUSTRIAL WASTE

H. CHLORINATION OF SEWAGE

I. BASIC LABORATORY TESTS

J. SAMPLING AND RECORD KEEPING

K. SAFETY

Pre-Course Familiarization:

Pre-course study material will be provided. When preparing to attend this course, an applicant must:

(a) Review the Ministry manual, Basic Sewage Treatment Operation;

(b) Complete the exercise in the Ministry manual, Mathematics for Water and Sewage Operators.

Prerequisites:

(a) Employment and desirably 6 months experience in the operation of a wastewater treatment plant;

(b) Desirably Grade XII academic standing.

Passing Grade:

70 per cent

Registraiton Fee:

$40.00 payable to "Training and Certification Section".

Appendix 2

## Course Description

## Activated Sludge Workshop

Purpose:

This workshop emphasizes process control and trouble-shooting. It is specifically directed at an operator employed as, or likely to be promoted to, shift foreman, operator-in-charge or chief operator of an activated sludge plant. CEU Value 3.0

Scope:

The workshop which includes considerable "hands-on" participation covers the following:

A. ACTIVATED SLUDGE OPERATING PRINCIPLES

B. FACTORS AFFECTING THE PROCESS

C. SAMPLING AND FLOW MEASUREMENT

D. IDENTIFICATION AND SOLUTION OF OPERATING PROBLEMS

E. PHOSPHORUS REMOVAL

F. MICROSCOPIC EXAMINATION

G. LABORATORY TESTS INCLUDING DO, PH, BOD , PHOSPHORUS DETERMINATION

Pre-Course Familiariation:

Pre-course study material will be provided. When preparing to attend this workshop an applicant must:

(a) Review the Ministry manual, Activated Sludge Process;

(b) Complete the exercises in the Ministry manual, Mathematics for Water and Sewage Operators.

Prerequisites:

Successful completion of the Ministry of the Environment Basic Sewage Treatment Operation Course; or equivalent.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

## Course Description

## Sludge Digestion and Handling Workshop

Purpose:

The Sludge Digestion and Handling Workshop emphasizes process control and troubleshooting. It is specifically directed at an operator employed as, or likely to be promoted to, shift foreman, operator-in-charge or chief operator of a primary treatment plant. CEU Value 3.0.

Scope:

The workshop which includes "hands-on" participation covers the following topics:

A. RAW SEWAGE CHARACTERISTICS

B. EQUIPMENT MAINTENANCE

C. PRIMARY SEDIMENTATION

D. ANAEROBIC AND AEROBIC DIGESTION
- THEORY
- OPERATION & CONTROL
- PROBLEM SOLVING

E. LABORATORY ANALYSES

F. SLUDGE HANDLING & DISPOSAL

G. GAS COLLECTION SYSTEMS

Pre-Coure Familiarization:

Pre-course study material will be provided. When preparing to attend this workshop, the applicant must:

(a) Review the course training manual;

(b) Complete the exercises in the Ministry manual Mathematics for Water and Sewage Operators.

Prerequisites:

Successful completion of the Ministry Basic Sewage Treatment Operation Course or equivalent.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

## Course Description

## Basic Water Treatment Operation Course

Purpose:

The Basic Water Treatment Operation Course is designed primarily for operators in training and to increase on-the-job efficiency of water treatment plant operators. The program stresses "the need to know" rather than the "nice to know" of all processes associated with water treatment. This course is a prerequisite to the Surface Water Treatment Workshop. CEU Value 3.0.

Scope:

The course covers the following topics:

A. WATER SOURCES

B. WATER BACTERIOLOGY AND SAMPLING

C. PHYSICAL AND CHEMICAL CHARACTERISTICS

D. COAGULATION, FLOCCULATION & SEDIMENTATION

E. WATER FILTRATION

F. CHLORINATION

G. SAFETY

H. BASIC LABORATORY TESTS

I. RECORDS

J. CHEMICAL DOSAGE CALCULATIONS

Pre-Course Familiarization:

Pre-course study material will be provided. When preparing to attend this course, an applicant must:

(a) Review the Ministry manual, Basic Water Treatment Operation;

(b) Complete the exercises in the Ministry manual, Mathematics for Water and Sewage Operators.

Prerequisites:

(a) Employement and desirably six months experience in the operation of water treatment plants;

(b) Desirably Grade XII academic standing.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

# Course Description

## Surface Water Treatment Workshop

Purpose:

The Surface Water Treatment Workshop is designed to increase the knowledge of experienced water treatment plant operators. It is specifically directed to an operator employed as, or likely to be promoted to, shift foreman, operator-in-charge or chief operator of a water treatment plant. CEU Value 3.0.

Scope:

The workshop which includes considerable "hands-on" participation covers the following topics:

A. BASIC WATER CHEMISTRY

B. MICROBIOLOGICAL CONSIDERATIONS

C. WATER TREATMENT CHEMICALS

D. COAGULATION

E. FILTRATION

F. TASTE & ODOUR CONTROL

G. LABORATORY TESTS

H. PROBLEM SOLVING

Pre-Course Familiarization:

Pre-course study material will be provided. When preparing to attend this workshop an applicant must:

(a) Review the Ministry manual, Surface Water Treatment;

(b) Complete the exercises in the Ministry manual, Mathematics for Water and Sewage Operators.

Prerequisites:

Successful completion of the Ministry of the Environment Basic Water Treatment Operation course; or equivalent.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section:.

Appendix 6

## Course Description

## Basic Gas Chlorination Workshop

Purpose:

The Basic Gas Chlorination Workshop is designed to familiarize the new or inexperienced operator with the operation of various types of gas chlorination equipment, as well as to teach safety, maintenance and troubleshooting procedures. CEU Value 3.0.

Scope:

The workshop which includes considerable "hands-on" participation covers the following topics:

A. CHLORINATION THEORY

B. COMPONENTS OF A GAS CHLORINATION INSTALLATION

C. CONTROL SYSTEMS

D. STORAGE AND HANDLING OF CHLORINE GAS CYLINDERS

E. SAFETY PRACTICES

F. CHLORINATION EQUIPMENT & COMPONENTS

G. START-UP & SHUT-DOWN PROCEDURES

H. GENERAL MAINTENANCE

I. TROUBLESHOOTING

J. CHLORINATION LABORATORY TESTS

Pre-Course Familiarization:

Pre-course study material, including the Basic Gas Chlorination manual, will be provided.

Prerequisites:

Employment in a water or wastewater treatment plant or as an operator of gas chlorination equipment used in industry or recreational facilities.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section:.

Appendix 7

## Course Description

## Pump Operation Workshop

Purpose:

This workshop, developed jointly with the Ontario Municipal Engineers Association, is designed to increase the knowledge and skills of personnel involved in operating and maintaining all forms of pumping and allied equipment. It is an extension of training for operators of water and wastewater treatment utilities. CEU Value 3.0.

Scope:

The workshop which includes "hands-on" participation covers the following:

A. CHARACTERISTICS OF MATERIALS PUMPED

B. PUMPING THEORY (HYDRAULICS & ENERGY)

C. TYPES OF PUMPS, FOR VARIOUS APPLICATION

D. CENTRIFUGAL PUMPS

E. POSITIVE DISPLACEMENT PUMPS

F. CONTROLS (PUMP APPLICATION PROCESS REQUIREMENTS)

G. VALVES

H. MOTORS

I. SAFETY

Pre-Course Familiarization:

Pre-course study material will be provided. When preparing to attend this workshop an applicant must review the Pump Operation Manual.

Prerequisites:

(a) Employed as an operator or maintenance man in a water or wastewater utility

(b) Desirably Grade XII academic standing

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

Appendix 8

## Course Description

## Preventive Maintenance Workshop

Purpose:

The Preventive Maintenance Workshop is designed to increase the knowledge and on-the-job efficiency of an operator who has some responsibility for maintaining water and wastewater plant equipment. It will teach the trainee good practices which are essential to achieve and sustain efficient operations. CEU Value 3.0.

Scope:

The workshop which includes "hands-on" participation covers the following topics:

A. TOOLS AND WORKSHOP SET-UP

B. UTILIZATION OF DRAWINGS AND EQUIPMENT MANUALS

C. MAINTENANCE OF PIPING AND VALVES

D. LUBRICATION

E. BEARINGS, SEALS AND PACKING

F. ALIGNMENT

G. PUMP TROUBLESHOOTING

H. MAINTENANCE OF PROCESS EQUIPMENT

Pre-Course Familiarization:

Pre-course study material, including the Preventive Maintenance Workshop manual, will be provided.

Prerequisites:

The candidate must be employed in water or waste-water treatment utility operations and/or maintenance.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section.

## Course Description

## Digester Gas Systems Maintenance Workshop

Purpose:

As required by the Energy Act 1971 and related Regulations, the workshop is designed to upgrade the knowledge and skills of personnel who operate and maintain the gas system in a wastewater treatment plant. The individual may write the Ministry of Consumer and Commercial Relations (MCCR) examination for certification as a Maintenance Gas Fitter in addition to the workshop final examination. CEU Value 3.0.

Scope:

The workshop covers the following topics:

A. DIGESTION PROCESS AND GAS PRODUCTION

B. DIGESTER GAS SYSTEM COMPONENTS

C. GAS PIPING

D. FUELS AND COMBUSTION

E. SAFETY

F. FUELS SAFETY REGULATIONS & CODES

Pre-Course Familiarization:

When preparing to attend this workshop, an applicant should familiarize himself with digester operations, and review the Energy Act 1971, related Regulations and the Installation Codes for Natural Gas (CAN 1-B149.1-M80), Propane (CGA 149.2-1976) and Oil Burning Equipment (CSA Standard B139-71).

Prerequisites:

The applicant must be employed in the maintenance of the gas system in a wastewater treatment plant. Desirably he should have completed the MOE Sludge Digestion and Handling Workshop and have training in the procedures for safe entry into confined spaces.

Passing Grade:

(a) 70 per cent

(b) A passing grade of 75 per cent must be attained on the MCCR test for certification as a Maintenance Gas Fitter

Registration Fee:

$40.00 payable to "Training and Certification Section", for the workshop

plus

$21.00 payable to "Treasurer of Ontario" if the individual elects to write the MCCR Certification examination.

## Course Description

## Operation and Maintenance of Water Distribution Systems

Purpose:

The course, Operation and Maintenance of Water Distribution Systems, is designed for new staff and to increase on-the-job efficiency of others. On completion of this course and the associated MOE workshops on pump operations and equipment maintenance, the individual will be capable of operating and maintaining water distribution systems, correcting malfunctions of equipment and performing quality control tests. CEU Value 3.0.

Scope:

The following topics will be dealt with:

A. WATER SOURCES AND TREATMENT

B. FACTORS IN PLANNING AND DESIGN

C. WATER QUALITY OBJECTIVES

D. WATERMAIN PIPES, JOINTS

E. APPURTENANCES

F. HYDRAULICS

G. LEAK DETECTION, REPAIR, THAWING, RESTORATION

H. CLEANING, FLUSHING, DISINFECTION, CROSS CONNECTIONS

I. REPORTS AND RECORDS, PUBLIC RELATIONS

J. SAFETY

K. CORROSION

Pre-Course Familiarization:

The applicant must review pre-course study material including the Ministry manual, Operation and Maintenance of Water Distribution Systems.

Prerequisites:

(a) Employed in operating and/or maintaining a water distribution system;

(b) Desirably Grade XII academic standing.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

## Course Description

## Operation and Maintenance of Wastewater Collection Systems

Purpose:

The Workshop, Operation and Maintenance of Wastewater Collection Systems, is designed for new staff and to increase on-the-job efficiency of others. On completion of this course and the associated MOE courses on pump operations and equipment maintenance the individual will understand the operation of a collection system and be capable of operating and maintaining the system and correcting malfunctions of equipment. CEU Value 3.0.

Scope:

The following topics will be dealt with:

A. DESIGN PARAMETERS

B. COMBINED/SANITARY SEWERS, APPURTENANCES

C. LIFT STATIONS

D. PLANNING FOR EMERGENCY SERVICES

E. FLOW MEASUREMENT AND CONTROL

F. INSPECTION AND TESTING

G. CLEANING, MAINTENANCE AND REPAIR

H. RECORDS AND ORGANIZATION

I. SAFETY

Pre-Course Familiarization:

An applicant must review the reference notes on Operation and Maintenance of Wastewater Collection Systems.

Prerequisites:

(a) Employment in the operation and/or maintenance of a wastewater collection system;

(b) Desirably Grade XII academic standing.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

Appendix 12

## Course Description

## Laboratory Skills for Plant Operators

Purpose:

The workshop is designed to provide operators with the basic skills to carry out in-plant testing and analysis. The curriculum covers techniques, procedures and tests which provide information for day-to-day process control. A successful candidate will be capable of performing the laboratory tests in either a water or wastewater treatment environment.
CEU Value 3.0

Scope:

The following topics will be dealt with:

A. SAMPLING TECHNIQUES FOR WATER AND WASTEWATER TREATMENT PROCESSES

B. LABORATORY TECHNIQUES INCLUDING SAFETY

C. OPERATION AND MAINTENANCE OF LABORATORY INSTRUMENTS

D. LABORATORY TESTING USING:

1. Turbidimeters
2. Spectrophotometers
3. Colour Comparators
4. Amperometric Titrators
5. Microscope
6. Jar Tester
7. Chromatographic
8. Distillation Apparatus
9. D.O. Meters
10. pH Meters
11. Analytical Balance

Pre-Course Familiarization:

Pre-course study material will be provided. The applicant must ensure that he is knowledgeable in water and wastewater treatment processes.

Prerequisites:

(a) Two or three years experience in plant operations;

(b) Successful completion of the Ministry of Environment Basic Sewage Treatment Operations Course and/or Basic Water Treatment Operations course;

(c) Desirably successful completion of the Ministry of Environment Activated Sludge Workshop and/or Primary Treatment and Digestion Workshop and/or Surface Water Treatment Workshop

or

acceptable equivalents.

Passing Grade:

70 per cent in written examination and demonstrated ability to carry out laboratory analyses.

Registration Fee:

$40.00 payable to "Training and Certification Section".

# Course Description

## Advanced Water/Wastewater Treatment

Purpose:

This three day seminar is designed to upgrade the knowledge of chief operators and plant superintendents on water and wastewater advanced treatment methods. The topics will vary from seminar to seminar covering tertiary treatment methods which have recently been introduced and those which are likely to be available in the near future. CEU Value 2.0.

Scope:

The scope of the seminar will vary. Topics such as those listed below will be selected:

A. PHYSICAL/CHEMICAL TREATMENT METHODS

(1) Coagulation/Flocculation

(2) Sedimentation

(3) Filtration

(4) Adsorption

(5) Ion Exchange

(6) Oxidation/Disinfection

B. BIOLOGICAL TREATMENT METHODS

(1) Phosphorus Removal

(2) Nitrification/Denitrification

C. SLUDGE TREATMENT AND DISPOSAL

(1) Thickening/Dewatering

(2) Incineration

(3) Sludge use in Agriculture

D. SAMPLING TECHNIQUES

E. ANALYSIS, INTERPRETATION AND REPORTING

F. LEGAL RESPONSIBILITIES OF AN OPERATOR

Pre-Course Familiarization:

Pre-course study material will not be provided. Those planning to attend should review publications dealing with secondary and tertiary water and wastewater treatment.

Prerequisites:

Desirably:

(a) Two to three years operational experience in a water and/or wastewater treatment plant, as a chief operator or superintendent;

(b) Successful completion of the Ministry of the Environment Activated Sludge Process Workshop and/or Surface Water Treatment Workshop, or equivalent.

Passing Grade:

Not Applicable

Registration Fee:

$40.00 payable to "Training and Certification Section/

# Course Description

## Instrumentation and Control

Purpose:

This course is designed to increase the knowledge and skills of personnel involved in operation and/or maintenance of water supply and wastewater treatment facilities. It is an extension of training for operators of water and wastewater utilities. CEU Value 3.0.

Scope:

The course includes presentations and discussions of the following topics:

A. WATER AND WASTEWATER TREATMENT PLANT

B. BASIC CONTROL MECHANISMS AND LOOPS

C. FLOW MEASUREMENT

D. PRESSURE, LEVEL AND TEMPERATURE MEASURING DEVICES

E. ANALYTICAL MEASURING INSTRUMENTS

F. CHEMICAL FEEDER CONTROL

G. TROUBLESHOOTING AND CALIBRATION

H. OPERATION AND PROCESS CONTROL BY COMPUTER SYSTEMS

Pre-Course Familiarization:

Pre-course study material will be provided. The applicant should have a good working knowledge of water and/or wastewater utility operation.

Prerequisites:

(a) Two or three years experience in utility operations.

(b) Successful completion of Ministry of Environment course in

- Basic Sewage Treatment Operations, or Basic Water Treatment Operations
- Pump Operations
- Or Acceptable Equivalents.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

# Course Description

## Water Supply Systems Operator Workshop

Purpose:

The Water Supply Systems Operator Workshop is designed to increase the knowledge and skills of inexperienced operators operating and maintaining small systems which employ minimum treatment.

CEU Value 3.0.

Scope:

The workshop will cover the following topics:

A. WATER SOURCES

B. WATER QUALITY CONSIDERATIONS AND TREATMENT

C. PUMPING FACILITIES

D. STORAGE FACILITIES

E. DISTRIBUTION SYSTEMS

F. DISINFECTION

G. SAFETY

H. SAMPLING AND TESTING

Pre-Course Familiarization:

Pre-course study material will be provided.

Prerequisites:

(a) Six to twelve months experience in a water supply system

(b) Desirably Grade XII Academic Standing.

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

## Course Description

## Confined Space Entry Workshop

Purpose:

This three and one-half day workshop is designed to familiarize employees of water and wastewater utilities with the requirements of the Occupational Health and Safety Act, 1978 and related Ontario Regulations 629 and 656. It will teach the student the safe practices and procedures for entry into confined space. The operation and maintenance of safety equipment is emphasized through demonstration and practice. CEU Value 2.5.

Scope:

The workshop includes presentations and "hands-on" practice of the following topics:

A. SAFETY REQUIREMENTS INCLUDING A REVIEW OF THE OCCUPATIONAL HEALTH & SAFETY ACT, ASSOCIATED REGULATIONS AND MOE SAFETY POLICY

B. HAZARDS

C. SAFETY EQUIPMENT

D. ENTRY PROCEDURES

Pre-Course Familiarization:

Pre-course study material will be provided. Those attending should carefully review the Act and Regulations.

Prerequisites:

Candidates for this course should have already received training in First Aid and CPR.

Passing Grade:

70 per cent in a written examination and demonstrated ability to safely enter a confined space.

Registration Fee:

$40.00 payable to "Training and Certification Section".

Appendix 17

## Course Description

## Operation and Maintenance of Wastewater Lift Stations

Purpose:

The workshop, Operation and Maintenance of Wastewater Lift Stations, is designed for entry level operations staff and to increase on-the-job efficiency of others. On completion of this workshop, and the associated courses on pump operations and preventive maintenance, the individual will be capable of operating and maintaining lift stations and related equipment. CEU Value 3.0.

Scope:

The following topics will be dealt with:

A. SEWAGE CHARACTERISTICS

B. WASTEWATER COLLECTION SYSTEMS

C. SAFETY/WORKING IN CONFINED SPACES

D. STATION CONTROL SYSTEMS

E. PUMP AND MOTOR APPLICATIONS

F. STANDBY POWER

G. STATION START-UP AND SHUT-DOWN

H. ROUTINE AND PREVENTIVE MAINTENANCE

I. RECORDS AND INSPECTION

J. STATION SECURITY

Pre-Course Familiarization:

An applicant must review pre-course study material including the Operation and Maintenance of Wastewater Lift Station Workshop manual.

Prerequisites:

(a) Employed in the operation and/or maintenance of a wastewater lift station;

(b) Desirably Grade XII academic standing standing

Passing Grade:

70 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

# Course Description

## Sewer and Watermain Design Courses

Purpose:

This course, developed and conducted jointly with the Ontario Municipal Engineers Association, is intended to broaden the understanding and knowledge of personnel who are engaged in the design of Sewer and Watermain Systems. Topics covered on the first half-day are common to both course segments, Sewer Design and Watermain Design. During the subsequent three and one-half days, each is held separately. The selection of the segment (sewer design or watermain design) should be clearly identified in the application. CEU Value 2.5.

Scope:

| Sewer Design | Watermain Design |
|---|---|
| A. PROJECT PROCEDURES | A. PROJECT PROCEDURES |
| B. PHYSICAL LAYOUT OF SEWER & WATERMAIN SYSTEMS | B. PHYSICAL LAYOUT OF SEWER & WATERMAIN SYSTEMS |
| C. INTRODUCTION TO STORM WATER MANAGEMENT | C. WATERMAIN PIPE MATERIALS |
| | D. SOURCES OF WATER SUPPLY |

D. SEWER PIPE MATERIALS

E. HYDROLOGY IN URBAN AREAS

F. SEWER DESIGN GENERAL

G. SEWER DESIGN PROBLEM CALCULATIONS

H. DESIGN CONSIDERATIONS WITH OTHER UTILITIES

I. STRUCTURAL ASPECTS OF DESIGN

J. SEWER APPURTENANCES AND HOW DESIGN AFFECTS MAINTENANCE

K. HYDRAULIC ASPECTS OF DESIGN

L. PROBLEM SOLVING OF JUNCTION MANHOLES

M. HYDROGRAPH TECHNIQUES

N. MAJOR-MINOR CONCEPTS AND DESIGN

E. WATERMAIN INSULATION

F. WATERMAIN APPURTENANCES AND TESTING

G. WATER VALVES

H. HOW DESIGN AFFECTS MAINTENANCE

I. DESIGN CONSIDERATIONS WITH OTHER UTILITIES

J. ESTIMATING WATER DEMAND

K. BASIC HYDRAULICS

L. DESIGN PROBLEM CALCULATIONS

M. DESCRIPTION OF LOOP ANALYSIS

N. WATERMAIN CORROSION

Pre-Course Familiarization:

(a) Review the lecture notes and other material mailed out for pre-course study;

(b) Answer the pre-course study problems, which will be discussed during the course.

Prerequisites:

Candidates for this course should have some basic understanding of sewer and watermain design and should be employed, at least in part, in the design of Sewer and Watermain Systems.

Registration Fee:

For live-in students, the fee is $365.00 (includes materials, meals and accommodation for four (4) days) at Nottawasaga Inn, Alliston, Ontario

For commuters, the fee is $200.00 which includes reference materials and meals.

Registration fee must be made payable to MUNICIPAL ENGINEERS ASSOCIATION.

# Course Description

## MEA/MOE Inspector's Course

## Construction of Sewers and Watermains

**Purpose:**

This course, developed and conducted jointly with the Ontario Municipal Engineers Association, is intended to broaden the understanding and knowledge of persons engaged in inspecting sewer and water-main construction projects. CEU Value 3.0.

**Scope:**

The course includes presentations on and discussions of the following topics:

A. BASIC ELEMENTS OF CONTRACT DOCUMENTS

B. ENVIRONMENTAL CONSIDERATIONS

C. CONSTRUCTION LAYOUT

D. TRAFFIC CONTROL

E. SEWER INSTALLATION AND TESTING

F. T.V. INSPECTION & INTERNAL GROUTING OF SEWER PIPE

G. CONSTRUCTION SAFETY

H. EXCAVATION AND BACKFILL

I. DEWATERING METHODS

J. PIPE MATERIAL AND INSTALLATION

K. WATERMAIN INSTALLATION AND TESTING

L. WATERMAIN CLEANING AND DISINFECTION

M. BLASTING

N. RESTORATION

O. INSPECTOR'S DUTIES AND RECORDS

Pre-Course Familiarization:

Pre-course study material will be provided. Personnel attending this course should be familiar with the Regulations in their own area.

Prerequisites:

Those attending the course should be employed in the private or public sector where a significant portion of the job function is inspection of Sewers and Watermains construction projects.

Passing Grade:

60 per cent

Registration Fee:

$40.00 payable to "Municipal Engineers Association of Ontario".

## Course Description

## Industrial Abatement - Air Management Course

**Purpose:**

The Industrial Abatement Air Management Course consists of three five-day sessions. It is designed to familiarize personnel with the air management aspect of Industrial Abatement, and to increase the knowledge of environmental staff involved with those duties.

**Scope:**

PART 1:

1. Air Contaminating Processes and Contaminants
2. Effects of Air Pollution
3. Air Contaminant Deposits causing Damage and Stains
4. Meteorological Aspects
5. Measurement of Air Pollution
6. Environmental Officers Duties and Responsibilities
7. Federal Program for Air Pollution Control
8. Odours
9. Phytotoxicology - Use & Scope
10. Atmospheric Hazardous Contaminants

PART II:

11. Fuels
12. Combustion
13. Boilers
14. Mechanical Stokers
15. Suspension Firing and Burners
16. Automatic Combustion Control Systems
17. Incineration and Incinerators
18. Pathological Incinerators - Crematory Design and Performance
19. Air Pollution From Sewage Treatment Plant
20. Concepts of Industrial Air Pollution Control

PART III:

21. Clay Products
22. Iron and Steel Production
23. Non-Ferrous Smelting Processes
24. Oil Refineries
25. Miscellaneous Industrial Processes
    a) Hot-Mix Asphalt Batch Plants
    b) Cement Production
    c) Lime Production
    d) Concrete-Batching Plants
    e) Paint-Baking Ovens
    f) Feed and Grain Mills
    g) Other Varied Industrial Process Sources

26. Investigative Photography

27. Continuous Air Pollution Source Monitoring Systems

28. Glossary

Pre-Course Familiarization:

Study material will be provided. When preparing for any part of this course an applicant must study the training manual.

Prerequisites:

An applicant must be responsible for functions related to air management aspects of a program.

There is no prerequisite that one part of the course be taken before another, but it is strongly recommended that applicants who are new to this field take Part I first.

Passing Grade:

Those trainees who achieve passing grades (70 per cent) for all three parts of the course will be awarded a certificate.

Registration Fee:

The fee for each part of the course is:

| | | |
|---|---|---|
| (1) | Government and Municipal employees | $40.00 |
| (2) | Others | $80.00 |

Payable to "Training and Certification Section".

## Course Description

## MEA/MOE Inspector's Course

## Construction of Sewer & Water Treatment Facilities

**Purpose:**

This course, developed and conducted jointly with the Ontario Municipal Engineers Association, is intended to broaden the understanding and knowledge of persons engaged in inspecting sewer and water treatment facility construction projects. CEU Value 2.5.

**Scope:**

The course includes presentations on and discussions of the following topics:

A. TENDERING AND CONTRACT PROCEDURES

B. BLASTING CONTROL

C. SOILS IN CONSTRUCTION

D. WATERMAIN DESIGN

E. SEWER DESIGN

F. CONSTRUCTION SAFETY

G. PLANT LAYOUT

H. REINFORCED CONCRETE PRACTICE

I. PLANT EQUIPMENT

J. TUNNELLING

K. ROLE OF THE INSPECTOR & RECORDS

Pre-Course Familiarization:

Pre-course study material will be provided. Personnel attending this course should be familiar with the Regulations in their own area.

Prerequisites:

Those attending the course should be employed in the private or public sector where a significant portion of the job function is inspection of the construction of Sewage and Water facilities.

Passing Grade:

60 per cent

Registration Fee:

$55.00 payable to "Municipal Engineers Association".

## Course Description

## Visible Emissions Identification Certificate Course

**Purpose:**

The Visible Emissions Identification Certificate Course is designed to train and certify personnel as being proficient in the identification of the opacities of visible emissions. It will also help to prepare the provincial officer for appearance in court as an expert witness. The course is a combination of lecture and demonstration, with practice. Recertification is required every twelve months.

**Scope:**

The course covers the following topics:

A. VISIBLE EMISSIONS - THEIR CAUSE AND REGULATION

B. CLASSIFICATION AND IDENTIFICATION OF SOURCES

C. PRINCIPLES OF COMBUSTION

D. METEOROLOGICAL FACTORS IN READING VISIBLE EMISSIONS

E. LEGAL ASPECTS AND COURTROOM APPEARANCES

F. PRACTICE IN IDENTIFICATION OF OPACITIES OF VISIBLE EMISSIONS

Pre-Course Familiarization:

When preparing to attend this course the applicant should read in advance the Visible Emissions Identification Manual, which will be sent out with pre-course material.

Prerequisites:

None

Passing Grade:

(a) 70 per cent on a written exam and;

(b) Identification of the opacity of a set number of consecutive visible emissions within the permitted deviation standards.

Registration Fee:

(a) For the Certificate Course:

| | | |
|---|---|---|
| (1) | Government and Municipal Employees | $40.00 |
| (2) | Others | $80.00 |

(b) For Recertification

| | | |
|---|---|---|
| (1) | Government and Municipal Employees | $10.00 |
| (2) | Others | $20.00 |

## Course Description

## Control of Liquid Industrial Waste

Purpose:

The four day course, Control of Liquid Industrial Waste, is designed for those responsible for the enforcement of a Liquid Industrial Waste By Law. It will provide knowledge of and solutions to problems which result from industrial waste discharges into a storm sewer, a wastewater collection system or a wastewater treatment plant. CEU Value 2.5.

Scope:

The following topics will be dealt with:

A. CHARACTERISTICS, PROBLEMS AND GENERAL TREATMENT METHODS OF SELECTED LIQUID INDUSTRIAL WASTES

B. FLOW MEASUREMENT AND SAMPLING

C. SURVEYS AND INSPECTIONS

D. EMERGENCY PLANS

E. REGULATIONS FOR HAULAGE AND DISPOSAL

F. SAFETY

G. MUNICIPAL CONTROL PROGRAM

Pre-Course Familiarization:

Pre-course study material, including a manual, will be provided. When preparing to attend, an applicant should familiarize himself with all aspects of the responsibilities of his organization for the control of liquid industrial wastes.

Prerequisites:

Those attending should have a good knowledge of waste-water treatment operations and have some responsibility for the functions dealt with on the course.

Passing Grade:

60 per cent

Registration Fee:

$40.00 payable to "Training and Certification Section".

## Course Description

## Waste Disposal by Landfilling

**Purpose:**

Seminars on Waste Disposal by Landfilling are held in Regional locations to increase the efficiency of municipal and private site operations. Those for management staff will deal with legislation requirements, design criteria and reports and management functions while those for operations staff will emphasize site development, operating procedures and special problems.

**Scope:**

Seminar topics will be selected from the following subjects:

A. LEGISLATION

B. SITE DESIGN, DEVELOPMENT AND OPERATIONS

C. LEACHATE AND GAS CONTROL

D. SPECIAL PROCEDURES FOR DISPOSAL OF PROBLEM MATERIAL

E. AIDS FOR WINTER OPERATIONS

F. CLOSURE AND PERPETUAL CARE

G. MANAGEMENT

Pre-Course Familiarization:

Those attending should review The Environmental Protection Act, The Environmental Assessment Act, associated Regulations and the Manual, Waste Disposal by Landfilling.

Prerequisite:

Nil

Passing Grade:

Not Applicable

Registration Fee:

In certain cases a fee may be charged to cover costs incurred for rental of classroom space, equipment etc.

## Course Description

## Environmental Investigations

Purpose:

The two week course is designed to upgrade the knowledge and skills of Provincial Officers who are responsible for carrying out investigations of incidents or alleged incidents of pollution of the environment. The course is held at the Ontario Police College (OPC) Aylmer, Ontario. Students will be provided with accommodation and meals. CEU VALUE 6.0.

Scope:

The following topics will be covered:

A. INTRODUCTION TO LAW

B. INVESTIGATIVE TECHNIQUES

C. EVIDENCE, WITNESSMANSHIP, COURTROOM PROCEDURES

D. SURVEILLANCE

E. PROVINCIAL OFFENCES ACT

F. MINISTRY LEGISLATION

G. BASIC ACCOUNTING

Pre-Course Familiarization:

Pre-course study material will be provided. Those attending should carefully review the Acts and Regulations pertaining to environmental protection.

Prerequisites:

Attendance is restricted to Ministry staff.

Passing Grade:

Not applicable

Registration Fee:

There is no registration fee but costs billed by the OPC are recoverable. Charges including accommodation and meals are approximately $500.00 per student for the two weeks.

## Course Description

## Environmental Noise Certificate Course

**Purpose:**

The Environmental Noise Certificate Course consists of four parts. It is designed to familiarize personnel with the techniques of practical acoustics required to fulfill the obligations of the municipal noise control officer or personnel of other noise control and abatement agencies. Upon successful completion of the appropriate parts of the course, the trainee will be qualified to perform noise control duties at the level indicated by the certificate rank awarded, as follows:

| Certificate | Course |
|---|---|
| Class 1 | Environmental Noise I and II |
| Class 2 | Environmental Noise I, II and III |
| Class 3 | Environmental Noise I, II, III and IV |

The Ontario Association of Certified Engineering Technicians and Technologists (OACETT) has approved the combined Courses I and II as a single

credit course for OACETT certification purposes. Consideration of Courses III and IV as OACETT credit courses is pending. CEU Value each part 3.0.

Scope:

The courses cover the following topics:

Environmental Noise I:

Introductory Environmental Noise Theory; Handling of noise complaints; Use of simple sound level meter, octave band analyser and calibration techniques; Measurement of traffic noise and industrial noise, Report procedures; Audiometry; Personal hearing test; Examination.

Environmental Noise II:

Review of Environmental Noise 1; Theory; Noise complaint investigations; Municipal Noise By-Law; National and International Standards; Use of 1/3 octave analyser; Tape recorder; Impulse sound level meter; Introduction to $L_{eq}$; Field work; Examination.

Environmental Noise III:

Review of Environmental Noise II; Theory; Analytical Methods; Sound descriptors; Percentiles; Cumulative and statistical distribution; Vibration analysis; Stationary source noise analysis; Laboratory; Field work; Examination.

Environmental Noise IV:

Review of Environmental Noise III: Theory; Use of digital and microprocessor controlled monitors; Industrial noise measurement; Off-road and road-side vehicles pass-by noise measurements; Noise and vibration control techniques; MOE technical publications; Preparation and implementation of a noise by-law; Advanced procedures; Selection of instrumentation; Examination.

Pre-Course Familiarization:

Pre-course study material, including a course manual, will be provided. When preparing to attend any part of this course, an applicant must complete the pre-course requirements.

Prerequisites:

Courses are to be taken in the order designated. Successful completion of a course of a lower rank is a prerequisite for progression to a higher level but, subject to Ministry approval, recognition will be given for prior formal training in acoustics subjects.

Passing Grade:

Candidates achieving a passing grade of 60 per cent will be awarded a certificate of competency in Environmental Noise in the rank achieved. Refresher courses should be taken at the achieved level or the next higher level, as appropriate.

Registration Fee:

The fee for each part of this four part course is:

| | | |
|---|---|---|
| (1) | Ontario Government and Municipal Employees | $ 50.00 |
| (2) | All others | $150.00 |

Payable to "Training and Certification Section".

# Course Description

## Noise Control In Land Use Planning

### Purpose:

The Course on Noise Control in Land use Planning discusses the impact of noise on land use. It is designed for individuals responsible for the preparation, review and approval of new land use development including municipal and provincial planning and building department staff, urban planners, engineers, architects and developers.

### Scope:

The course includes a review of relevant topics included in the Environmental Noise Certificate Courses I through III, and covers the following subjects:

A. LAND USE PLANNING CONCEPTS AND PROCEDURES

B. PLANNING PROCESS IN ONTARIO

C. ANALYSIS OF COMMUNITY NOISE

D. SOUND LEVEL LIMITS AND CRITERIA

E. PREDICTION OF ROAD TRAFFIC AND TRAIN NOISE LEVELS

F. AIRCRAFT NOISE CONTOURS; ANALYSIS OF NOISE CONTROL MEASURES

G. PREDICTION OF SOUND BARRIER ATTENUATION

H. BUILDING ACOUSTICS AND MATERIAL

I. MEASUREMENT OF SOUND WITH SOUND LEVEL METERS

J. CALCULATION WORKSHOP

K. REPORT WRITING AND PROCEDURES

Pre-Course Familiarization:

Pre-course study material, including manuals will be provided. Candidates, who have not had suitable previous formal training are advised to review the relevant parts of Environmental Noise I, II and III.

Passing Grade:

Candidates achieving a passing grade of 60% will be awarded a Certificate denoting successful completion of the course.

Registration Fee:

The fee for this course is:

| | | |
|---|---|---|
| (1) | Ontario Government and Municipal employees | $ 50.00 |
| (2) | All others | $150.00 |

Payable to "Training and Certification Section".

## Course Description

## Safety and Sampling - Hazardous Chemicals

Purpose:

This three day seminar is designed to increase the knowledge and skills of Environmental Officers who may be involved in the assessment of hazardous waste spills or investigations of other hazardous waste incidents. CEU Value 2.0.

Scope:

The seminar will include lectures, demonstrations and hands-on practice. Topics will include:

A. HAZARDOUS CHEMICAL RECOGNITION AND EVALUATION

B. BASIC CHEMISTRY OF HAZARDOUS CONTAMINANTS

C. PERSONAL PROTECTION

D. OPERATING SAFETY GUIDELINES

E. SAMPLING KNOWN AND UNKNOWN HAZARDOUS MATERIALS

Pre-Course Familiarization:

Pre-course study material will be provided.

Prerequisites:

None

Passing Grade:

Not Applicable

Registration Fee:

$40.00 payable to "Training and Certification Section".

## Course Description

## Stationary Source Sampling

Purpose:

This five day course is designed as an introduction to the theory and practice of stationary source sampling. Engineers, chemists and technicians will be exposed to the fundamentals of planning, executing and reporting on stack sampling programs. Emphasis is placed on the development of a thorough appreciation of sampling procedures for gaseous and particulate pollutants that comply with federal and provincial air regulations and codes. CEU Value 3.0.

Scope:

The course, which includes practical exercices, covers the following topics:

A. INTRODUCTION TO SOURCE SAMPLING

B. BASIC COMPONENTS OF PARTICULATE SAMPLING TRAIN

C. SURVEY AND TESTING

D. GAS AND PARTICULATE ANALYSIS

Pre-Course Familiarization:

Reference material will be provided on registration.

Prerequisites:

P. Eng. or Engineering Technician and a knowledge of fluid dynamics

Passing Grade:

Successful completion of the course requires the submission of an acceptable report on the practical evaluation of a source of emission.

Registration Fee:

To be determined

**PROGRAM SCHEDULE 1984/85**

| PROGRAM | CAPACITY | DATES | | LOCATION |
|---|---|---|---|---|
| Basic Sewage Treatment | 25 | Sept. 10-14 | 1984 | Training Centre |
| | | Nov. 26-30 | 1984 | Training Centre |
| | | Feb. 4-8 | 1985 | Training Centre |
| | | April 29-May 3 | 1985 | Training Centre |
| Activated Sludge Process | 25 | Oct. 22-26 | 1984 | Training Centre |
| | | Feb. 18-22 | 1985 | Training Centre |
| | | May 6-10 | 1985 | Training Centre |
| Sludge Digestion and Handling | 25 | Jan. 7-11 | 1985 | Training Centre |
| Basic Water Treatment | 25 | Oct. 15-19 | 1984 | Training Centre |
| | | Dec. 10-14 | 1984 | Training Centre |
| | | Feb. 25-29 | 1985 | Training Centre |
| | | May 13-17 | 1985 | Training Centre |
| Surface Water Treatment | 25 | Nov. 19-23 | 1984 | Training Centre |
| | | Mar. 4-8 | 1985 | Training Centre |

**PROGRAM SCHEDULE 1984/85**

| PROGRAM | CAPACITY | DATES | | LOCATION |
|---|---|---|---|---|
| Basic Gas Chlorination | 25 | Sept. 17-21 | 1984 | Training Centre |
| | | Dec. 3-7 | 1984 | Training Centre |
| | | Mar. 11-15 | 1985 | Training Centre |
| | | May 27-31 | 1985 | Training Centre |
| Pump Ops. Workshop | 25 | Sept. 24-28 | 1984 | Training Centre |
| | | Feb. 11-15 | 1985 | Training Centre |
| | | Apr. 15-19 | 1985 | Training Centre |
| Preventive Maintenance | 25 | Oct. 15-19 | 1984 | Training Centre |
| | | Mar. 18-22 | 1985 | Training Centre |
| Digester Gas Systems | 25 | Nov. 19-23 | 1984 | Training Centre |
| Op/Mtce Wastewater Collection Systems | 25 | Nov. 5-9 | 1984 | Training Centre |
| Op/Mtce Water Distribution Systems | 25 | Oct. 29-Nov. 2 | 1984 | Training Centre |
| Laboratory Skills for Plant Operators | 15 | Oct. 1-5 | 1984 | Training Centre |
| | | Jan. 21-25 | 1985 | Training Centre |
| | | Apr. 22-26 | 1985 | Training Centre |

**PROGRAM SCHEDULE 1984/85**

| PROGRAM | CAPACITY | DATES | | LOCATION | |
|---|---|---|---|---|---|
| Advanced Water/Waste-water Treatment | 35 | Jan. 7-11 | 1985 | MOE Laboratories | |
| Instrumentation and Control | 25 | Jan. 28-Feb. 2 | 1985 | Training Centre | |
| Water Supply System Operations | 25 | Apr. 29-May 3 | 1985 | Training Centre | |
| Confined Space Entry | 25 | Sept. 24-28 | 1984 | Training Centre | |
| | | Apr. 15-19 | 1985 | Training Centre | |
| O & M Wastewater Lift Stations | 25 | Mar. 25-29 | 1985 | Training Centre | |
| Sewer & Watermain Design | 60 | Oct. 15-18 | 1984 | Nottawasaga Inn Alliston, Ont. | (Registration Oct. 14/84) |
| MEA/MOE Inspectors Course - Sewer and Watermain Construction | 60 | Dec. 10-14 | 1984 | MOE Laboratories | |
| MEA/MOE Inspectors Course - Facility Construction | 60 | Mar. 11-15 | 1985 | MOE Laboratories | |

PROGRAM SCHEDULE **1984/85**

| PROGRAM | CAPACITY | DATES | | LOCATION | |
|---|---|---|---|---|---|
| Industrial Air Abatement I | 25 | Oct. 1-5 | 1984 | MOE Laboratories | |
| Industrial Air Abatement II | 25 | Feb. 25-Mar. 1 | 1985 | MOE Laboratories | |
| Industrial Air Abatement III | 25 | May 27-31 | 1985 | MOE Laboratories | |
| Visible Emissions | | June 17-28 | 1985 | Locations to be determined | |
| Control of Liquid Industrial Waste | 40 | Nov. 26-30 | 1984 | MOE Laboratories | |
| Waste Disposal by Landfilling | 25 | To be determined | | Regional Locations | |
| Environmental Investigations | 24 | Nov. 5-14 | 1984 | Ontario Police College, Aylmer | (MOE ONLY Registration Nov. 4/84) |
| Environmental Noise I | 25 | Nov. 19-23 | 1984 | MOE Laboratories | |
| Environmental Noise II | 25 | Mar. 18-22 | 1985 | MOE Laboratories | |
| Environmental Noise III | 25 | Sept. 17-21 | 1984 | MOE Laboratories | |
| Environmental Noise IV | 25 | June 10-14 | 1985 | MOE Laboratories | |

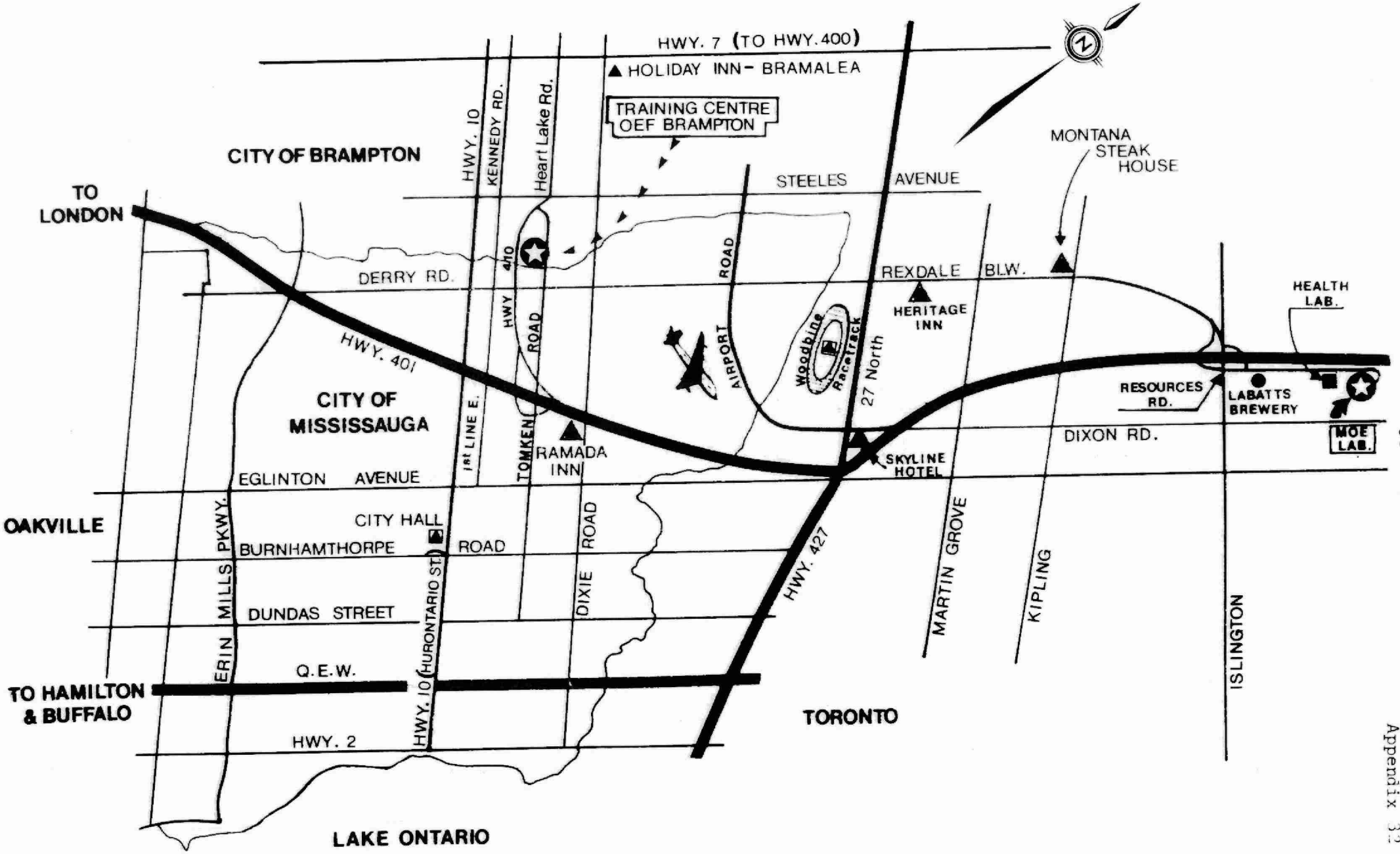
## PROGRAM SCHEDULE 1984/85

| PROGRAM | CAPACITY | DATES | | LOCATION | |
|---|---|---|---|---|---|
| Environmental Noise in Land Use Planning | 50 | Sept. 10-14 | 1984 | MOE Laboratories | |
| | | May 13-17 | 1985 | MOE Laboratories | |
| Safety & Sampling | 25 | Nov. 5-9 | 1984 | Training Centre | (For EOs & Emergency Response Pers.) |
| Stack Sampling | 30 | To be determined | | MOE Laboratories | |

# TRAINING AND CERTIFICATION SECTION

## CALENDAR - 1984 - 1985

| | COURSES/WORKSHOPS | Sep/84 | | | | Oct/84 | | | | | Nov/84 | | | | Dec/84 | | | Jan/85 | | | | Feb/85 | | | | Mar/85 | | | | Apr/85 | | | | May/85 | | | | Jun/85 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 17 | 24 | | 1 | 8 | 15 | 22 | 29 | 5 | 12 | 19 | 26 | 3 | 10 | 17 | 7 | 14 | 21 | 28 | 4 | 11 | 18 | 25 | 4 | 11 | 18 | 25 | 1 | 8 | 15 | 22 | 29 | 6 | 13 | 20 | 27 | 3 | 10 | 17 | 24 | |
| 1 | Basic Sewage Treatment | ● | | | | | | | | | | | | ● | | | | | | | | ● | | | | | | | | | | | | ● | | | | | | | | | |
| 2 | Activated Sludge Process | | | | | | | | ● | | | | | | | | | | | | | | | ● | | | | | | | | | | | ● | | | | | | | | |
| 3 | Sludge Digestion & Handling | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Basic Water Treatment Operations | | | | | | | ● | | | | | | | | ● | | | | | | | | | ● | | | | | | | | | | | ● | | | | | | | |
| 5 | Surface Water Treatment | | | | | | | | | | | | ● | | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | |
| 6 | Basic Gas Chlorination | | | ● | | | | | | | | | | | ● | | | | | | | | | | | | | ● | | | | | | | | | | ● | | | | | |
| 7 | Pump Operations | | | ● | | | | | | | | | | | | | | | | | | ● | | | | | | | | | ● | | | | | | | | | | | |
| 8 | Preventive Maintenance | | | | | | | ● | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| 9 | Digester Gas Systems | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Op/Mtce WW Collection Systems | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Op/Mtce Water Distribution Sys. | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Laboratory Skills | | | | | ● | | | | | | | | | | | | | | ● | | | | | | | | | | | | ● | | | | | | | | | | |
| 13 | Adv W/WW Treatment Operation | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | Instrumentation & Control | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | |
| 15 | Water Supply Systems Operations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | |
| 16 | Confined Space Entry | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| 17 | Op/Mtce WW Lift Stations | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| 18 | Sewer & Watermain Design | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | MEA/MOE Const.Sewer/Watermain | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | MEA/MOE Facility Construction | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| 21 | Industrial Abatement I | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | Industrial Abatement II | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | |
| 23 | Industrial Abatement III | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| 24 | Visible Emissions | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | ● |
| 25 | Control of Liquid Ind. Waste | | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | Waste Disposal | TO BE DETERMINED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | Environmental Investigations | | | | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | Environmental Noise I | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | Environmental Noise II | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| 30 | Environmental Noise III | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | Environmental Noise IV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | |
| 32 | Env.Noise Land Use Planning | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | |
| 33 | Safety & Sampling for EO | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | | | |
| 34 | Stack Sampling | TO BE DETERMINED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |


HWY. 7 (TO HWY. 400)
HOLIDAY INN - BRAMALEA
TRAINING CENTRE OEF BRAMPTON
MONTANA STEAK HOUSE
CITY OF BRAMPTON
HWY. 10
KENNEDY RD.
Heart Lake Rd.
STEELES AVENUE
TO LONDON
DERRY RD.
HWY 410
HWY. 401
CITY OF MISSISSAUGA
AIRPORT ROAD
Woodbine Racetrack
27 North
REXDALE BLVD.
HERITAGE INN
HEALTH LAB.
RESOURCES RD.
LABATTS BREWERY
MOE LAB.
DIXON RD.
1st LINE E.
TOMKEN ROAD
RAMADA INN
SKYLINE HOTEL
EGLINTON AVENUE
OAKVILLE
CITY HALL
BURNHAMTHORPE ROAD
ERIN MILLS PKWY.
DUNDAS STREET
HURONTARIO ST.
DIXIE ROAD
HWY. 427
MARTIN GROVE
KIPLING
ISLINGTON
Q.E.W.
TO HAMILTON & BUFFALO
HWY. 10
HWY. 2
TORONTO
LAKE ONTARIO

## ACCOMMODATION

| HOTEL | TELEPHONE | SINGLE | DOUBLE |
|---|---|---|---|
| BRISTOL PLACE<br>950 DIXON RD. | 675-9444 | $54.00 | $67.00 |
| CAMBRIDGE HOTEL<br>DIXON RD. HWY 401 | 249-7671 | 42.00 | 45.00 |
| CARA INN<br>6257 AIRPORT RD. | 678-1400 | 52.00 | 62.00 |
| CONSTELLATION HOTEL<br>900 DIXON ROAD | 675-1500 | 54.00 | 66.00 |
| HERITAGE INN<br>385 REXDALE BLVD | 742-5510 | 40.00 | 48.00 |
| HOLIDAY-INN (Airport)<br>970 DIXON ROAD | 675-7611 | 52.00 | 66.00 |
| HOWARD JOHNSON'S<br>(Airport Hotel)<br>801 DIXON ROAD | 675-6100 | 50.00 | 55.00 |
| RAMADA INN<br>544 DIXIE RD.<br>(Mississauga) | 624-1144 | 54.00 | 54.00 |
| SKYLINE HOTEL<br>655 DIXON ROAD | 244-1711 | 54.00 | 64.00 |
| HOLIDAY-INN(Bramalea)<br>30 PEEL CENTRE DR | 792-9900 | 52.00 | 57.00 |
| RELAX INN<br>5599 AMBLER DR<br>(Mississauga) | 624-9500 | 33.25 | 33.25 |
| JOURNEY'S END<br>1500 MATHESON BLVD<br>(Mississauga) | 624-6900 | 38.88 | 45.88 |

The above government rates were provided by the management of each hotel and are subject to change with time. When requesting reservations, the actual government rate should be confirmed.

To qualify for the above room rates, please inform the hotel registration clerk that you are attending a Ministry of the Environment course.


TERMINAL STREAM: MONTREAL R.

| DATE | ISSUED TO |
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